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EXAMINER
LERNER, MARTIN

ART UNIT	PAPER NUMBER
2626	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/530,155	DIEDERICH ET AL.	
	Examiner	Art Unit	
	MARTIN LERNER	2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 July 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3 to 22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *18 to 20* is/are allowed.

6)☒ Claim(s) *1, 3 to 17, and 21 to 22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 July 2009* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 4, 7, 9, and 21 to 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Shaw* in view of *Busa*.

Concerning independent claim 1, *Shaw* discloses a method of producing indications of dangerous behavior, comprising the steps of:

"capturing language cues that are indicative of the psychological or physiological state of a patient, wherein the language cues comprise semantic cues" – a computer system 10 is implemented by one or more processors 12 to detect and monitor the occurrence of psychological states in computer generated communications of authors who transmit or receive computer generated communications, such as email, chat, and website content (column 12, line 66 to column 13, line 6: Figure 8); communications from email or online chat represent "language cues"; broadly, an individual whose psychological state is being monitored is "a patient"; a personal and organizational keyword algorithm compares phrases associated with specific acts (column 14, line 64 to column 15, line 4); the term "semantic" is defined as "of or relating to meaning in

language"; phrases are elements of language, and the objective is to extract meaning from these phrases reflective of a psychological state;

"analyzing the language cues to determine key features" – a group of software modules includes a parser module 16 which identifies and tabulates words and word phrases present in at least one computer generated communication to or from source 14 to identify categories of information therein (column 13, lines 44 to 51: Figure 8); module 22 executes at least one personal and organizational keyword algorithm which analyzes key words and phrases; expressed in connection to an individual or organizational characteristic, policy, or practice, keywords provide greater evidence that a potentially dangerous emotional state detected in the at least one psychological profiling algorithm may be connected to an individual or an organization (column 17, lines 18 to 25: Figure 8); key words are "key features" of a psychological profiling algorithm;

"producing a data file containing data based upon the key features" – results of the analysis are forwarded to database and statistical module 18, where the aforementioned identified, counted, and recorded words, phrases and message characteristics are stored in the form of a spreadsheet (column 13, lines 51 to 57: Figure 8); a spreadsheet of identified and counted key words is "a data file" produced from the key words for psychological profiling;

"submitting the data file to one or more pre-taught machine learning algorithms" – database and statistical module 18 assigns the information to specific database categories of information for analysis by three analytical modules 20, 22, and 24;

module 20 includes at least one psychological profiling algorithm which provides an indication of a psychological state of the author (column 13, line 57 to column 14, line 6: Figure 8); modules 20, 22, and 24 further apply their algorithms to the data contained in the database and statistical module 18 to statistically compare the results of the current computer generated communication to a fully programmable criteria for each of the categories of information produced by each of the modules (column 14, lines 7 to 30: Figure 8); thus, algorithms of analytical modules 20, 22, and 24 are “pre-taught machine learning algorithms" because the criteria are programmable;

“combining output of the machine learning algorithms to determine the psychological or physiological state of the patient” – modules 20 and 24 include psychological state and message characteristic algorithms to identify a psychological state of the author (column 13, line 60 to column 14, line 6: Figure 8).

Concerning independent claim 1, the only element omitted by *Shaw* is “wherein producing the data file comprises filtering the semantic cues with a stoplist”. However, stoplists are well known expedients in various forms of database searching for both creating the database and extracting key terms from a search query. Specifically, *Busa* teaches an analogous art method and system for automated inference creation of physico-chemical interaction knowledge from databases of co-occurrence data. *Busa* states that an extracted set of chemical or biological molecule names that are included in a set of extracted names are filtered against a ‘stop-list’ of trivial terms to be ignored. Thus, a generic term, “Biological Markers” is a trivial term to be ignored, insofar as it represents a general concept rather than a specific chemical or biological molecule

name. (Column 11, Lines 6 to 15: Figures 2A and 2B: Step 52) An objective is to determine a likelihood statistic and applying it to a co-occurrence to determine whether a co-occurrence is non-trivial in response to contextual querying. (Column 4, Lines 15 to 48) It would have been obvious to one having ordinary skill in the art to employ a stoplist as a known technique to filter a data file as taught by *Busa* for querying a data file representing a psychological state of *Shaw* for a purpose of ignoring trivial terms.

Concerning independent claim 21, *Shaw* further discloses "display means adapted to display the psychological or physiological state of the patient" – results of analysis performed are sent to the reporting and warning module 26 and then to the output generator 28, when an output communication is required to be provided to the user or agent thereof (column 14, line 50 to column 15, line 8: Figure 8); computer system 100 produces graphic or tabular ratings of the contents of a work product (column 19, lines 64 to 65).

Regarding independent claim 22, *Shaw* further discloses:

"analyzing the corpus of documents to extract information meeting determined content criteria" – a computer system 10 is implemented by one or more processors 12 to detect and monitor the occurrence of psychological states in computer generated communications of authors who transmit or receive computer generated communications, such as email, chat, and website content (column 12, line 66 to

column 13, line 6: Figure 8); communications from email or online chat represent “a corpus of documents”;

“returning extracted information that meets a determined psychological state” – results of analysis performed are sent to the reporting and warning module 26 and then to the output generator 28, when an output communication is required to be provided to the user or agent thereof (column 14, line 50 to column 15, line 8: Figure 8); modules 20 and 24 include psychological state and message characteristic algorithms to identify a psychological state of the author (column 13, line 60 to column 14, line 6: Figure 8).

Concerning claim 4, *Shaw* discloses that a computer system 10 is implemented by one or more processors 12 to detect and monitor the occurrence of psychological states in computer generated communications of authors who transmit or receive computer generated communications, such as email, chat, and website content (column 12, line 66 to column 13, line 6: Figure 8); communications from email or online chat represent “text from a patient”.

Concerning claim 7, *Shaw* discloses counting a number of keywords and phrases, and comparing the number and type of alert phrases to an average or mean (column 13, lines 48 to 51; column 14, line 64 to column 15, line 4: Figure 8); counting keywords relative to an average is equivalent to "a frequency of occurrence of words"; a computer system 10 is implemented by one or more processors 12 to detect and monitor the occurrence of psychological states in computer generated communications of authors who transmit or receive computer generated communications, such as email,

chat, and website content (column 12, line 66 to column 13, line 6: Figure 8); communications from email or online chat represent “a text sample”; phrases are “blocks of words”.

Concerning claim 9, *Shaw* discloses that language parser 16 deconstructs the document to identify categories of information, and passes the deconstructed document to an analysis engine 212 to apply a selected rule set and to perform programmed scoring calculations to obtain a numerical score (column 21, lines 14 to 22: Figure 10); deconstructing and scoring the document involves "pre-processing" and "transformations" of data.

3. Claims 3, 6, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Shaw* in view of *Busa* as applied to claim 1 above, and further in view of *Brown et al. (WO ‘158)*.

Shaw analyzes language cues from emails, chat, and website content to determine a psychological state, but omits utilizing visual cues including facial expression or body movements by capturing images or a video sample for changes in areas of interest over time. However, *Brown et al. (WO ‘158)* teaches computer diagnosis and screening of psychological and physical disorders, where a series of visual images of a selected body part of a human subject are recorded sequentially over a predetermined time period, and comparing image changes to determine whether or not the subject suffers from a mood disorder. (Abstract) It is suggested that an objective is to provide a less subjective assessment system of a psychological and

physical state of a patient as an additional clue to a patient's choice of words and mode of speaking. (Page 1) It would have been obvious to one having ordinary skill in the art to utilize visual cues including facial expression and body movements by capturing images or a video sample for changes over time as taught by *Brown et al. (WO '158)* in a method for analysis of computer generated communications of *Shaw* for a purpose of providing a less subjective assessment system of a psychological state.

4. Claims 5 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Shaw* in view of *Busa* as applied to claims 1 and 9 above, and further in view of *Bogdashevsky et al. ('188)*.

Shaw analyzes text to identify a psychological state, but does not obtain semantic cues from speech that is converted to text or provide normalization and translation to a form required for one or more machine learning algorithms. However, it is well known that speech can be converted to text by automatic speech recognition software. *Bogdashevsky et al. ('188)* teaches speech signal processing for determining psychological or physiological characteristics using a knowledge base. Digitized speech samples are obtained to generate 30 phrases, which are categorized by CPU 104. (Column 4, Line 61 to Column 5, Line 13: Figures 1 and 2) Energy normalization is performed on the speech signals. (Column 7, Lines 35 to 36: Figure 3: 318) Then, CPU 104 sorts vectors into clusters 400 representing psychologically homogeneous groups. (Column 7, Lines 51 to 62: Figure 4) Speech parameters of a test subject are compared to the cluster statistics for each psychologically homogenous group in order

to determine which groups correlate most highly to the test subject. (Column 10, Lines 43 to 47) Thus, clustering is "translation to a form required for one or more machine learning algorithms." An objective is to determine an effectiveness of treatment for a psychological or physiological disorder. (Column 3, Lines 23 to 27) It would have been obvious to one having ordinary skill in the art to obtain semantic cues from speech that is converted to text and to translate to a form required for machine learning algorithms as taught by *Bogdashevsky et al. ('188)* in a method for analysis of computer generated communications of *Shaw* for a purpose of determining an effectiveness of treatment for a psychological disorder.

5. Claims 11 to 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Shaw* in view of *Busa* as applied to claims 1 and 12 above, and further in view of *Brunner et al*.

Concerning claim 11, *Shaw* does not expressly state that the algorithms are selected from a support vector machine or a neural network. However, *Brunner et al*. teaches a method of monitoring behavior informatics, where a model can be a neural net or a support vector machine algorithm. (Column 8, Lines 40 to 42; Column 23, Lines 13 to 30; Column 24, Lines 43 to 44) An objective is to extract behavioral, physiological, and neurological states of test animal and subjects. (Column 3, Lines 35 to 53) It would have been obvious to one having ordinary skill in the art to employ a neural net or support vector machine algorithm as taught by *Brunner et al*. in a method

for analysis of computer generated communications of *Shaw* for a purpose of extracting behavioral, physiological, or neurological states of test subjects.

Concerning claim 12, *Brunner et al*. teaches evolving classification rules for each class such that they best capture the features and traits of each class. (Column 22, Lines 17 to 23)

Concerning claim 13, *Brunner et al*. teaches that training data is used to evolve classification rules. (Column 22, Lines 19 to 21) Implicitly, "notice" is taken that training data for psychological profiling is obtained from control and test subjects.

Concerning claims 14 and 15, *Shaw* discloses that module 20 provides psychological profiling derived by an algorithm from the work of Weinberg. (Column 16, Line 47 to Column 17, Line 6) Implicitly, the algorithm for psychological profiling derived from the work of Weinberg is "an expert-defined health related category for learning purposes"; additionally, a category is "discrete" in the sense that an absolute threshold limit is applied to analysis of the communications. (Column 14, Line 64 to Column 15, Line 4)

Concerning claim 16, *Shaw* discloses ranking psychological characteristics on a scale of 0 to 10. (Column 20, Lines 24 to 36)

Concerning claim 17, *Brunner et al*. teaches that training data is used to evolve classification rules. (Column 22, Lines 19 to 21) Implicitly, rules evolve in the sense that they may still change over time after initial training.

Allowable Subject Matter

6. Claims 18 to 20 are allowed.

7. The following is a statement of reasons for the indication of allowable subject matter:

Independent claim 18 sets forth the limitations of filtering a collection of expert descriptions of psychological or physiological conditions with a stoplist, and forming an intersection of lists of frequently occurring descriptive terms, which combination is not disclosed or reasonably suggested by the prior art of record. *Shaw* discloses that module 20 provides psychological profiling derived by an algorithm from the work of Weinberg, which may be construed as an expert description of psychological conditions. (Column 16, Line 47 to Column 17, Line 6) However, *Shaw* does not expressly state that the collection of expert descriptions is filtered with a stoplist, or that an intersection of lists of frequently occurring descriptive terms are used for machine learning.

Response to Arguments

8. Applicants' arguments are persuasive as directed to the objection to the Drawings and the Specification. The objections are withdrawn. Applicants' Drawings and Specification reasonably comply with the requirements of 37 CFR §1.84(p)(5).

9. Applicants' arguments filed 09 July 2009 have been considered but are moot in view of the new grounds of rejection, necessitated by amendment. Independent claims 1, 21, and 22 are now rejected under 35 U.S.C. §103(a) as being unpatentable over *Shaw* in view of *Busa*. Independent claims 1, 21, and 22 were amended to include the

limitation of "wherein producing the data file comprises filtering the semantic cues with a stoplist". *Busa* teaches using a stoplist in analogous art directed to creating and querying a biochemical database for physico-chemical interactions. The objective of filtering using a stoplist is the well known advantage of ignoring trivial terms. Thus, Applicants' arguments traversing the rejection as failing to provide any teaching of a stoplist to filter semantic cues are moot.

10. Applicants' arguments filed 09 July 2009 have been fully considered but they are not persuasive.

Moreover, Applicants argue that independent claims 1 and 22 recite "key features" that are not the same as "keywords" disclosed by *Shaw*. Applicants maintain that independent claims 1 and 22 do not require counting keywords, nor does their method require analyzing phrases, as taught by *Shaw*. Applicants note that claim 7, as amended, recites that analyzing language cues comprises pre-processing a text sample into blocks of words and extracting key features by analyzing the text sample in each of the blocks of words. Applicants say that *Shaw* discloses the use of a parser, which identifies keywords and phrases and message characteristics. Finally, Applicants argue that *Shaw* discloses the results of the analysis are forwarded to a database and statistical module, but does not disclose the claimed machine learning algorithms. These arguments are not persuasive.

Firstly, Applicants' Specification does not appear to define the scope of what constitutes "key features" so as to exclude "keywords" from being "key features". Indeed, the Specification, Page 9, Lines 1 to 9, and Page 12, Lines 19 to 24, suggests

that the data file submitted to the machine learning algorithm is generated from a list of words, and the frequency of occurrence of each word. This is completely equivalent to what is disclosed by *Shaw*. Moreover, Applicants' Specification, Page 14, Lines 2 to 5, states that the search engine uses a combination of key words to determine the psychological state expressed by a text. Thus, Applicants have not demonstrated any distinction between their claimed "key features" and *Shaw*'s "keywords".

During patent examination, the pending claims must be "given their broadest reasonable interpretation consistent with the specification." *Phillips v. AWH Corp.*, 415 F.3d 1303, 75 USPQ2d 1321 (Fed. Cir. 2005) Applicant always has the opportunity to amend the claims during prosecution, and broad interpretation by the examiner reduces the possibility that the claim, once issued, will be interpreted more broadly than is justified. *In re Prater*, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-51 (CCPA 1969)

Similarly, Applicants' comments are not persuasive for the patentability of claim 7. *Shaw* discloses counting a number of keywords and phrases, and comparing the number and type of alert phrases to an average or mean. Comparing a number of occurrences of a keyword or phrase to a means is the same as determining a frequency of occurrence. *Shaw* at least discloses doing this for "words", and words are combinations of "symbols", so that *Shaw* meets the language of "words, syllables, phonemes, or other symbols" of claim 7.

Furthermore, a phrase can be broadly construed to be equivalent to a block of words. There appears to be nothing in Applicants' Specification that suggests how the scope of the term "blocks of words" is to be construed. The term "blocks of words"

appears to be simply some undefined subset of the original text sample, and a phrase is a “block of words” representing a minimum element of meaning.

Secondly, the claim limitation of "one or more pre-taught machine learning algorithms" cannot be read to distinguish over analytical modules 20, 22, and 24 of *Shaw*. Certainly, *Shaw* discloses that psychological profiling algorithms 20, personal and organizational key word algorithms 22, and message characteristics algorithms 24 are “algorithms” that are performed by a "machine". Moreover, these algorithms are "pre-taught" in that they are already trained to identify indications of states and characteristics. Thus, the only conceivable distinction might rely upon the limitation of a “learning” algorithm. However, because independent claims 1, 21, and 22 are directed to a method of using the algorithm rather that a method of training the algorithm, there would not be a substantial difference in how the algorithm is executed. Basically, Applicants’ arguments suggest that they would like to read a neural network, or analogous algorithm, into the term “machine learning”. Still, the scope of the term “machine learning” is unclear, and not well defined, so it should be broadly construed. Applicants’ independent claims do not specifically set forth any particular form of “machine learning algorithm". It is maintained that the algorithms of modules 20, 22, and 24 of *Shaw* can be equivalently described as “machine learning algorithms” because they are programmable and already trained to recognize certain indications and characteristics.

Therefore, the rejections of claims 1, 4, 7, 9, and 21 to 22 under 35 U.S.C. §103(a) as being unpatentable over *Shaw* in view of *Busa*, of claims 3, 6, and 8 under

35 U.S.C. §103(a) as being unpatentable over *Shaw* in view of *Busa*, and further in view of *Brown et al. (WO '158)*, of claims 5 and 10 under 35 U.S.C. §103(a) as being unpatentable over *Shaw* in view of *Busa*, and further in view of *Bogdashevsky et al. ('188)*, and of claims 11 to 17 under 35 U.S.C. §103(a) as being unpatentable over *Shaw* in view of *Busa*, and further in view of *Brunner et al.*, are proper.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to Applicants' disclosure.

Horton and Vogel disclose related prior art directed to filtering with a stop list.

12. Applicants' amendment necessitated the new grounds of rejection presented in this Office Action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicants are reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARTIN LERNER whose telephone number is (571)272-7608. The examiner can normally be reached on 8:30 AM to 6:00 PM Monday to Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David R. Hudspeth can be reached on (571) 272-7843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Martin Lerner/
Primary Examiner
Art Unit 2626
September 24, 2009